TRAINING THE NEXT GENERATION OF IMPLEMENTATION RESEARCHERS

Chair: Enola Proctor, PhD, Center for Mental Health Services Research
Discussant: John Landsverk, PhD, Children's Hospital in San Diego
Presenters: Gregory Aarons, PhD, University of California, San Diego, Brian Mittman, PhD, VA Greater Los Angeles Healthcare System

Key issues and challenges

In the emergent field of implementation research (IR), debate about theory continues and research methods remain underdeveloped. Moreover, funding sources and publication outlets continue to change rapidly. Few centers of deep research activity are established, and no current NIH funded training programs identify their focus as implementation research. Implementation science is inherently multidisciplinary, conducted by researchers from a diverse range of disciplines for which implementation issues may not be central. The field of implementation science is not ready for typical training approaches in which an established body of knowledge is transmitted by a core of experts. New models are needed to inform training for this important field and stimulate the development of new programs.

In this "think tank" session, a panel of implementation researchers led a large group of participants in identifying and discussing challenges to training in implementation science. Three types of individuals attended the think tank: (1) representatives from federal funding agencies interested in advancing IR training; (2) early career researchers seeking to identify sources of training in implementation research; these included current K awardees who felt isolated in their home institutions, where few researchers are involved in implementation science; and (3) a handful of participants who were established implementation researchers seeking ideas and direction for how to train young researchers.

The panel offered as a "case study" a training model with draft curriculum they have shaped as a "learning collaborative" and for which they are seeking support through an NIH R25 application. Their training program proposes to employ didactic teaching and experiential learning methods, distance learning, and training in observation of agency- and research-implementation efforts. The panel elicited participants' experiences in training for IR, ideas about methodological challenges new researchers will confront, and future directions for developing and supporting IR training content, structure and infrastructure.

Barriers and strategies for overcoming barriers.

The panel led think tank participants in identifying an array of challenges to IR training. The first identified challenge is the limited scope and depth of current implementation research activity. The panel reported that CRISP searches of funded NIH grants identified only a handful of centers focused on implementation science and even fewer, if any, IR-focused training programs. No existing NIH funded T32 or R25 programs were found to focus specifically on implementation research. Consequently, there is a shortage of faculty mentors and training settings although there is evidence of a wide pool of potential training applicants with a pent-up appetite to learn IR methods. Several think tank participants were junior or mid-career researchers who, lacking opportunity for "immersion" into IR, came to the D&I Conference and this session in particular hoping to identify training opportunities specific to IR. Discussion generated several strategies, as shown in Table 1 column two, for overcoming some

of these barriers. Participants cited the need for NIH to make as a priority the funding of IR training, such as through existing T32 and R25 mechanisms. Other strategies include establishing a network to match (and incentivize) mentors with trainees and developing training consortia. At this stage of development in implementation science, training should be centralized to serve a national pool of trainees, and trainees should be linked with sites of funded implementation research to leverage that science for training purposes.

Because of pressing needs to accelerate the translation of science to routine health care, the field cannot delay training the next generation of IR scientists until the substance and methodology for IR are fully developed. Thus a second major challenge is the need to simultaneously develop both human and intellectual capacity for IR. This challenge carries several implications. Training in IR needs to capitalize on currently funded research projects in implementation science. For example, the proposed "learning collaborative for IR training" developed by panelists would send

Table 1:
Barriers to IR Training and Strategies for Overcoming Them

Barriers & Challenges	Strategies for overcoming
No current T32 programs currently focused on IR; Few identifiable "experts" in IR	T32 and R25 training programs need to focus on IR Training consortia needed Need for centralized IR training programs that serve a national pool Training should provide for trainee observation, field work, and engagement with externally funded IR projects that are "scattered" around the country
IR is an emergent field with under-developed curriculum models and yet-to-be defined core skills and competencies	Innovative models must develop the field while growing a pipeline of implementation researchers Curriculum must be developed (independent reading, seminars, journal clubs) Core skills and knowledge must be identified Need to attract young investigators early in their training
IR is inherently transdisciplinary	Engage an interdisciplinary faculty; Locate IR training in transdisciplinary centers Cross department, cross school/ program Locate IR in programs such as public health, health administration, health services, social work, the VA Use CTSA's as IR research and training sites
IR = multilevel	Content must include: organizational content, multilevel organizations Innovative designs "disappearing n" problem
Research funding is silo-ed by disease, while IR cuts across disease	Establish new mechanisms to support research training that span diseases and NIH Institutes

trainees to established sites of IR for structured observation and for reporting back to the training program. IR training cannot be advanced without work to identify the unique and necessary competencies and skills required for conducting implementation research. And finally, the field needs to work to attract people to IR early in their careers, its methodological complexities

notwithstanding.

Third, IR research poses challenges to appropriate design and analysis. Trainees need to be exposed to experimental, quasi experimental, case and observational studies, and mixed methods and "hybrid" designs. Moreover, IR requires the ability to measure outcomes other than clinical outcomes, and poses problems of power for randomizing units for analysis. Unlike RCT designs, there are no textbooks for IR methodology. Implementing change always involves action at multiple levels, including the provider, the organization, and the policy context and organizational characteristics facilitate or hinder implementation. Thus implementation researchers need to be capable of studying organizational climate, culture and readiness for change.

Fourth, as IR is inherently transdisciplinary, the distinctive knowledge domains required for IR are unlikely to be found in any single department. Programs such as public health, healthcare administration, social work, and VA may provide natural "homes" for IR training with modest refinements or expansions. CTSA programs are well-situated to push for, and provide support for, implementation research and IR training. IR needs to be informed by a literature that is now diverse and scattered. IR researchers need exposure to thinking from a range of disciplines, and training programs need to be structurally interdepartmental or even cross-institutional. Panel members described draft curricular models but noted that IR training will need to draw on independent guided reading, seminars, and journal clubs to cover content that is not available through existing courses. Experiential learning and tacit knowledge are also important.

A fifth challenge for IR training is the current "silo-ing" of NIH training resources by disease. This problem persists in spite of the fact that implementation research questions generalize across and span individual diseases. While AHRQ supports some training (as for health quality improvement) that spans disease spectrums, NIH training mechanism are Institute- (and thus disease-) specific.

Issues for future research

Panelists and participants concluded that bold and innovative efforts are required to develop skilled implementation researchers. Several issues remain for future research and development. What possibilities are there for trans-NIH program announcements to establish new training programs, K awards, T programs in implementation research? What are some innovative approaches to funding IR training? How might new programs, such as AHRQ's call for methodological innovations in quality improvement, Fogarty International's Clinical Operational Health Services Research and Training Award Program for HIV/AIDS and TB and its "Framework Programs for Global Health" curriculum development program, and prevention research initiatives (such as NIDA's) be leveraged to support IR? Who might develop rosters of potential mentors with junior implementation researchers? Finally, there is need for data, such as the extent of training support for translation two, or dissemination and implementation, research at NIH (and within individual NIH Institutes), CDC, and AHRQ.